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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,456	04/02/2001	Masaaki Yuri	NAK1-BO34	9508

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EXAMINER

MENEFEE, JAMES A

ART UNIT PAPER NUMBER

2828

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/824,456

Applicant(s)

YURI ET AL.

Examiner

James A. Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 and 29-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 29-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Paul IP*  
PAUL IP  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \*   c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

In response to the amendment filed 27 June 2003, the specification and claims 1-14 and 16 are amended, claims 20-28 cancelled, and claims 29-38 added. Claims 1-19 and 29-38 are pending.

### ***Information Disclosure Statement***

Applicant's statement that there was no IDS filed 17 December 2001 is noted. This must have been entered in the file in error. The IDS filed 27 May 2003 has been considered as on the attached sheet.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "the optical element" in line 4. There is insufficient antecedent basis for this limitation in the claim. The term should read "the diffraction grating".

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 29-31, 33, and 36-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Ota (US 5,570,226). Ota discloses the following (see. esp. Fig. 24A and the discussion thereof).

Regarding claim 1 and 29, Ota discloses a semiconductor laser device comprising a plurality of laser light oscillators 116x, 116y, 116z, 117 that each emit a laser beam from an outlet thereof, and a diffraction grating 119 that at least partially reflects a laser beam that is oscillated in at least one of the laser light oscillators so that a portion of the laser beam is incident on at least one of the other laser light oscillators 117. The limitation that this operation is “to enable phase locking” is not given patentable weight. This functional limitation that describes the operation of the device does not define any structure of the device. If the applicant wishes to distinguish from the prior art, then structure that defines how this phase locking takes place must be added to the claim.

Regarding claims 4 and 36, a reflecting optical path of the grating is directed to the outlet of the at least one other light oscillator, thereby the portion of the laser beam is directed in a vicinity of an optical axis of the laser beam at the outlet of the at least one other light oscillator.

Regarding claims 30-31, the optical element is a diffraction grating including a flat plate.

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Regarding claim 33, the oscillators are in a single array and are real refractive index guided self aligned structures.

Regarding claim 37, the grating includes horizontal and vertical grooves that cross each other.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 5-10, 13-17, 34-35, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota.

Regarding claims 2 and 35, Ota discloses the laser light oscillators are included in a semiconductor laser array element. It is not disclosed that the grating is partially reflective and partially transmissive. However, it is well known that a grating in an external cavity type laser such as this may be partially reflective and partially transmissive. It would have been obvious to one skilled in the art to use such a “translucent” grating so that one can take a portion of the output directly from the grating side of the device, as is well known.

Regarding claims 3 and 38, it is further not disclosed that the plurality of light oscillators are located in a plurality of array elements (rather than the single array element as shown). It would have been obvious to one skilled in the art to form this array in a number of elements as

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claimed, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

Regarding claims 5-6, Ota discloses the diffraction grating is a flat plate having a main surface that is a scabrous plane, the main surface being an incidence plane of the laser beam.

Regarding claims 7-8, the diffraction grating is a flat plate that includes the diffraction grating on a main surface thereof, the main surface being an incidence plane of the laser beam and, as deemed obvious above, partially diffracting the laser beam at a predetermined angle.

Regarding claims 9-10, the specifics of the grating are not disclosed. However, the examiner maintains that this is a known grating, and one skilled in the art would choose such a grating as a matter of intended use as a known means of transporting the lasers emitted from the arrays. Therefore, it would have been obvious to one skilled in the art to choose this known grating as a matter of obvious engineering design choice.

Regarding claims 13-14, the oscillators each have two outlets 114, 115, from one outlet the laser beam is emitted to the grating, and from the other outlet it is not. The grating is disposed to face the outlet that emits toward it.

Regarding claim 15, the array elements are included on a single substrate.

Regarding claims 16-17, the oscillators are in a single array and are real refractive index guided self aligned structures.

Regarding claim 34, the particular active layers are not disclosed. However, such active layers are known in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use these particular materials for the active layers, since it has been held to be within the general skill of a worker in the art to select a known material on the

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basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Claims 11-12 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota in view of Rakuljic et al. (US 5,691,989). Ota teaches the claimed limitations as shown above, but does not teach the grating is a hologram. Rakuljic teaches that a hologram grating may be substituted for a grating. It would have been obvious to one skilled in the art to use a hologram grating as it is accurate and temperature stable, as taught by Rakuljic.

Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota in view of Craig et al. (previously cited US 6,167,075). The claims are describing a plurality of the devices of claim 1 having the outputs of each device condensed, and various other means. Craig teaches a number of laser array elements whose outputs are condensed as claimed (figs. 1, 6). It would have been obvious to one skilled in the art to utilize a number of arrays in this manner to provide a high power output, as taught by Craig.

### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pillai and Sanchez-Rubio et al. show external cavity laser array systems where the outputs of each laser of the array are not reflected to another laser in the array. Davis shows a laser array system where phase locking does occur.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (703) 605-4367. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



JM  
September 3, 2003



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